pulse energy source for the first chamber and after the triggering of a second solid state switch connected to the respective electrical pulse energy source for the second chamber, comprising:

a fire control command module receiving a first fire control input signal and, responsive to the first fire control input signal, providing a charging initiation signal to the charging circuit, and a preselected time later providing a fire control initiation signal to a timing energy module;

the fire control command module also providing to the timing energy module a first time delay signal to be added to the fire control initiation signal to provide a trigger signal for the first chamber and a second time delay signal to be added to the fire control initiation signal to provide a trigger signal for the second chamber;

a first light out detection mechanism measuring a light out event for the output of the first chamber and a second light out detection mechanism measuring a light out event for the output of the second chamber, each of the first and second light out detection mechanisms providing an output signal representative of the occurrence of the respective light out event to the timing energy module;

a correlating mechanism in the timing energy module correlating the occurrence of the respective light out events of the first chamber and the second chamber to the fire control initiation signal, and providing to the fire control command module, a respective light out time for the first chamber and for the second chamber, each respective light out time correlated to the fire control initiation signal;

a fire control processor connected to the fire control command module and operative to read the respective correlated light out time for each of the first chamber and the second chamber and, responsive to the respective correlated light out time, to generate a respective first time delay signal and second time delay signal for the next discharge in the respective first chamber and in the second chamber.

25. (new): The apparatus of claim 24 further comprising:

the respective correlated light out time for the first chamber and for the second chamber is provided by the timing energy module to the fire control processor with an accuracy of less than one nanosecond.

26. (new): The apparatus of claim 24 further comprising:

the correlation mechanism is a timer;

the timing energy module commences the running of the timer in response to receipt of the fire control initiation signal from the fire control command module.

27. (new): The apparatus of claim 25 further comprising:

the correlation mechanism is a timer;

the timing energy module commences the running of the timer in response to receipt of the fire control initiation signal from the fire control command module.

28. (new): The apparatus of claim 24 further comprising:

the light out event detection mechanism measures the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

29. (new): The apparatus of claim 25 further comprising:

the light out event detection mechanism measures the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

30. (new): The apparatus of claim 26 further comprising:

the light out event detection mechanism measures the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

31. (new): The apparatus of claim 27 further comprising:

the light out event detection mechanism measures the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

32. (new): The apparatus of claim 24 further comprising:

the light out event detection mechanism measures the occurrence of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

33. (new): The apparatus of claim 25 further comprising:

the light out event detection mechanism measures the occurrence of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

34. (new): The apparatus of claim 26 further comprising:

the light out event detection mechanism measures the occurrence of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

35. (new): The apparatus of claim 27 further comprising:

the light out event detection mechanism measures the occurrence of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

36. (new): The apparatus of claim 32 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

37. (new): The apparatus of claim 33 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

38. (new): The apparatus of claim 34 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

39. (new): The apparatus of claim 35 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

40. (new): The apparatus of claim 26 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

41. (new): The apparatus of claim 27 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

42. (new): The apparatus of claim 28 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

43. (new): The apparatus of claim 29 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

44. (new): The apparatus of claim 30 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

45. (new): The apparatus of claim 31 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

46. (new): The apparatus of claim 32 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

47. (new): The apparatus of claim 33 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

48. (new): The apparatus of claim 34 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

49. (new): The apparatus of claim 35 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

50. (new): The apparatus of claim 36 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

51. (new): The apparatus of claim 37 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

52. (new): The apparatus of claim 38 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

53. (new): The apparatus of claim 39 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

54. (new): The apparatus of claim 50 further comprising:

an oscillator circuit having a clock range in the tens of megaHz;

a linear analog capacitive element charged by output pulses from the oscillator circuit;

a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

55. (new): The apparatus of claim 51 further comprising:

an oscillator circuit having a clock range in the tens of megaHz;

a linear analog capacitive element charged by output pulses from the oscillator circuit;

a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

56. (new): The apparatus of claim 52 further comprising:

an oscillator circuit having a clock range in the tens of megaHz;

a linear analog capacitive element charged by output pulses from the oscillator circuit;

a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

57. (new): The apparatus of claim 53 further comprising:

an oscillator circuit having a clock range in the tens of megaHz;

a linear analog capacitive element charged by output pulses from the oscillator circuit;

a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

58. (new): A timing control method for a two chambered gas discharge laser system operating at discharge repetition rates of in excess of 3000 Hz and having a first chamber providing a seed laser beam to a second amplifying chamber, with each of the first chamber and second chamber receiving a pulse of electrical energy across a respective pair of discharge electrodes, after a respective initial charging capacitor in a respective electrical pulse energy source is charged from a charging circuit, and after the triggering of a first solid state switch connected to the respective electrical pulse energy source for the first chamber and after the triggering of a second solid state switch connected to the respective electrical pulse energy source for the second chamber, comprising:

using a fire control command module, receiving a first fire control input signal and, responsive to the first fire control input signal, providing a charging initiation signal to the charging circuit, and at a preselected time later providing a fire control initiation signal to a timing energy module;

using the fire control command module, also providing to the timing energy module a first time delay signal to be added to the fire control initiation signal to provide a trigger signal for the first chamber and a second time delay signal to be added to the fire control initiation signal to provide a trigger signal for the second chamber;

measuring a first light out event for the output of the first chamber and a second light out event for the output of the second chamber, and providing an output signal representative of the occurrence of the respective first and second light out events to the timing energy module;

using a correlating mechanism in the timing energy module, correlating the occurrence of the respective light out events of the first chamber and the second chamber to the fire control initiation signal, and providing to the fire control command module a respective light out time for the first chamber and for the second chamber, each respective light out time correlated to the fire control initiation signal;

in a fire control processor connected to the fire control command module reading the respective correlated light out time for each of the first chamber and the second chamber and, responsive to the respective correlated light out time, generating a respective first time delay signal and second time delay signal for the next respective discharge in the first chamber and in the second chamber.

59. (new): The method of claim 58 further comprising:

providing the respective correlated light out time for the first chamber and for the second chamber to the timing energy module to the fire control processor with an accuracy of less than one nanosecond.

60. (new): The method of claim 58 further comprising:

commencing the running of a timer in the timing energy module in response to receipt of the fire control initiation signal from the fire control command module.

61. (new): The method of claim 59 further comprising:

commencing the running of a timer in the timing energy module in response to receipt of the fire control initiation signal from the fire control command module.

62. (new): The method of claim 58 further comprising:

detecting the light out event by measuring the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

63. (new): The method of claim 59 further comprising:

detecting the light out event by measuring the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

64. (new): The method of claim 60 further comprising:

detecting the light out event by measuring the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

65. (new): The method of claim 61 further comprising:

detecting the light out event by measuring the occurrence of light in the respective chamber or at the output of the respective chamber exceeding a preselected threshold intensity.

66. (new): The method of claim 58 further comprising:

detecting the light out event by measuring the occurrence in the respective chamber of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

67. (new): The method of claim 59 further comprising:

detecting the light out event by measuring the occurrence in the respective chamber of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

68. (new): The method of claim 60 further comprising:

detecting the light out event by measuring the occurrence in the respective chamber of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

69. (new): The method of claim 61 further comprising:

detecting the light out event by measuring the occurrence in the respective chamber of a voltage in the respective electrical pulse energy source exceeding a preselected threshold.

70. (new): The method of claim 66 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

71. (new): The method of claim 67 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

72. (new): The method of claim 68 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

73. (new): The method of claim 69 further comprising:

the voltage is the respective peaking capacitor voltage being applied to the respective pair of electrodes in the first and second chambers.

74. (new): The method of claim 60 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

75. (new): The method of claim 61 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

76. (new): The method of claim 62 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

77. (new): The method of claim 63 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

78. (new): The method of claim 64 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

79. (new): The method of claim 65 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

80. (new): The method of claim 66 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

81. (new): The method of claim 67 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

82. (new): The method of claim 68 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

83. (new): The method of claim 69 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

84. (new): The method of claim 70 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

85. (new): The method of claim 71 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

86. (new): The method of claim 72 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

87. (new): The method of claim 73 further comprising:

the respective first and second time delay signal is a respective count which the timer is to reach whereupon the respective trigger signal is to be generated.

88. (new): The method of claim 84 further comprising:

using an oscillator circuit having a clock range in the tens of megaHz;

charging a linear analog capacitive element with the output pulses of the oscillator circuit;

using a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

89. (new): The method of claim 85 further comprising:

using an oscillator circuit having a clock range in the tens of megaHz;

charging a linear analog capacitive element with the output pulses of the oscillator circuit;

using a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

90. (new): The method of claim 86 further comprising:

using an oscillator circuit having a clock range in the tens of megaHz;

charging a linear analog capacitive element with output pulses from the oscillator circuit;

using a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.

91. (new): The method of claim 87 further comprising:

using an oscillator circuit having a clock range in the tens of megaHz;

charging a linear analog capacitive element with output pulses from the oscillator circuit;

using a voltage sensing mechanism operatively connected to the capacitive element and sensitive to voltage variation in the energy stored in the capacitive element to a sensitivity that results in sub-nanosecond time resolution accuracy.